

The Center for the Study of Life In The Universe **SETI Institute** 2035 Landings Drive Mountain View, Ca 94043-0818 (650) 961-6633

Final Technical Report For Cooperative Agreement NCC 2-1064 Entitled:

"Identification, Characterization, and Exploration of Environments for Life on Mars"

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Chief Executive Officer The Center for the Study of Life In The Universe

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## List of Publications generated during the period of performance for NCC 2-1199

- Bebout, M. B., Des Marais, D. J., Discipulo, M., Embaye, T., Ferran Garcia-Pichel, F., Hogan, M., Jahnke, L.L., Keller, R. M., Miller, S. R., Prufert-Bebout, L.E., Raleigh, C., Rothrock, M., and Turk, K. 2002. Long Term Manipulations of Intact Microbial Mat Communities in a Greenhouse Collaboratory: Simulating Earth's Present and Past Field Environments. Astrobiology (in press).
- DeVincenzi, D.L. and Harold P. Klein, "Planetary Protection and Human Missions to Mars," Abstracts, 33rd Assembly of COSPAR, Warsaw, Poland, July 2000 (2000).
- DeVincenzi, D.L. and Harold P. Klein, "Planetary Protection and Human Missions to Mars," Adv. Space Res. (in press 2000).
- Eder, W., Jahnke, L.L., Schmidt, M. and Huber, R. 2001. Microbial diversity of the bine-seawater interface of the Kebrit Deep, Red Sea studied via 16S rRNA gene sequences and cultivation methods. Applied and Eviron. Microbiology <u>67</u>:3077-3085.
- Farmer, J., J.D. Nelson, R., Greeley, H. Klein, and R. Kuzmin, "Site Selection for the MGS'01 Mission: An Astrobiological Perspective," in: Second Mars Surveyor Landing Site Workshop Rpt., pp. 30-32 (2000).
- Greeley, R., C.P. McKay, and H.P. Klein, "Europa as a Target for Exobiological Exploration: Galileo Considerations," Abstracts, *First Astrobiology Conf.*, NASA Ames Research Center, pp. 194, April 2000 (2000).
- Habicht, K., Des Marais, D. and Jahnke, L. Sulfur and carbon isotope fractionation during lithotrophic growth by the hyperthermophilic sulfate reducer *Archaeoglobus* sp. Abstracts of the Astrobiology Science Conference, p. 162, April 2001.
- Jahnke, L. L., Eder, W., Huber, R., Hope, J. M., Hinrichs, K.-U., Hayes, J. M., Des Marais, D. J., Cady, S. L., and Summons, R. E. 2001. Signature lipids and stable carbon isotope analyses of Octopus Spring hyperthermophilic communities compared with those of *Aquificales* representatives. Applied and Environ. Microbiology <u>67</u>:5179-5189.
- Jahnke, L. L., Eder, W., Huber, R. Hinrichs, K.-U., Hayes, J. M., Des Marais, D. J., Cady, S. L., Hope, J. M. and Summons, R. E. Composition of hydrothermal vent microbial communities as revealed by analysis of signature lipids, stable carbon isotopes and *Aquificales* cultures. Second General Meeting of NASA Astrobioloty Institute, Carnegie Institute, Washington DC, April 2001.
- Jahnke, L. L., Summons, R. E., Hope, J. M. and Cullings, K. W. Carbon isotopic fractionation associated with cyanobacterial biomarkers: 2-Methylhopanoids and methyl-branched alkanes. In 11<sup>th</sup> Annual V. M. Goldschmidt Conference Abstract #3748. LPI Contribution No. 1088, Lunar and Planetary Institute, Houston (CD-ROM) 2001.
- Jahnke, L. L., Farmer, J. D., Summons, R.E. and Klein, H. P. Hopanoid biomarker preservation in coniform (*Phormidium*) Stromatolites in siliceous thermal springs, Yellowstone National Park. Abstracts First Astrobiology Science Conference, p. 267 2000.

- Jahnke, L. L., Embaye, T., Turk, K. A., and Summons, R. E. Hypersaline microbial mat lipid biomarkers. Abstracts of the Astrobiology Science Conference, p. 201, April 2001.
- Nelson, D.M., J.D. Farmer, R. Greeley, H.P. Klein, and R.O. Kuzmin, "Geology and Landing Sites of the Eysium Basin-Terra Cimmeria Region, Mars," in: Second Mars Surveyor Landing Site Workshop Rpt., pp. 71-73 (2000).
- Nelson, D.M., R. Greeley, J.D. Farmer, R.O. Kuzmin, and H.P. Klein, "Potential Ancient Fluvial Deposits at the Amenthes Rupes Paleolake, Mars," *Lun. Planet. Sci. Conf. XXXI*, Abstract on CD-ROM (2000).
- Race, M., G. Kovacs, J. Rummel, and S.E. Acevedo, eds., Mars Sample Handling Protocol Workshop Series, Interim Report: Workshop 2 Proceedings, NASA/CP-2001-210923 (2001).
- Race, M., K. Nealson, J. Rummel, and S.E. Acevedo, eds., Mars Sample Handling Protocol Workshop Series, Interim Report: Workshop 3 Proceedings, NASA/CP-2001-211388 (2001).
- Race, M., D.L. DeVincenzi, J. Rummel, and S.E. Acevedo, eds., Mars Sample Handling Protocol Workshop Series, Interim Report: Workshop 4 Proceedings, NASA CP (in press 2002).
- Summons, R., Jahnke, L., Cullings, K. and Logan, G. Absence of sterol biosynthesis in cyanobacteria. Abstracts of the Astrobiology Science Conference, p. 151, April 2001.